

VPDES PERMIT FACT SHEET

This document gives pertinent information concerning the **reissuance** of the VPDES permit listed below. This permit is being processed as a **Minor, Municipal** permit. The effluent limitations contained in this permit will maintain the Water Quality Standards of 9 VAC 25-260-00 et.seq. The discharge results from the operation of a wastewater treatment facility consisting of the following units: main pump station; mechanical screen; hydraulic vortex grit removal system; splitter box; two sequencing batch reactors (SBRs), which provide aeration, clarification, and removal of nutrients and suspended solids; post equalization basin; tertiary filters; ultraviolet light disinfection system; parshall flume with ultrasonic level sensor; post aeration facilities; effluent line; two aerobic digesters; sludge press. This permit action consists of limiting pH, CBOD<sub>5</sub>, suspended solids, E.coli, ammonia nitrogen and dissolved oxygen; and including special conditions regarding sewage sludge use and disposal, compliance reporting, control of significant dischargers, and other requirements and special conditions.

SIC Code: 4952

1. Facility Name and Location:  
Northern Tazewell County Wastewater Treatment Facility  
2748 Rosenbaum Road  
Bluefield, VA 24605
2. Permit No. VA0091588  
Existing Permit Expiration Date: December 21, 2014
3. Owner Name and Address: Tazewell County Public Service Authority  
P.O. Box 190  
North Tazewell, VA 24630  
Owner Contact: Dahmon Ball  
Title: Administrator  
Telephone No: (276) 988-2243
4. Application Complete Date:  
Permit Drafted By: Fred M. Wyatt, SWRO Date: 08/04/2014  
Reviewed By: Steve E. Artif Date: 8/4/2014  
Public Comment Period Dates: from \_\_\_\_\_ to \_\_\_\_\_
5. Receiving Stream Name: Laurel Fork; River Mile: 9-LRR003.15; Basin: New River; Subbasin: None; Section: 1g; Class: IV; Special Standards: u  
  
7-Day, 10-Year Low Flow (7Q10): 0.095 MGD (June - Dec.)  
1-Day, 10-Year Low Flow (1Q10): 0.067 MGD (June - Dec.)  
7Q10 High Flow: 0.175 MGD (Jan.- May)  
1Q10 High Flow: 0.081 MGD (Jan. - May)  
30-Day, 10-Year Low Flow (30Q10): 0.15 MGD  
  
Latitude: 37°18'00"; Longitude: 81°21'14"  
  
Tidal? NO  
  
303(D) list? Yes
6. Operator License Requirements: Class III

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7. Reliability Class: III
8. Permit Characterization:  
( ) Private ( ) Federal ( ) State (X) POTW ( ) PVOTW  
( ) Possible Interstate Effect ( ) Interim Limits in Other Document
9. Attach a schematic of wastewater treatment system, and provide a general description of the activities of the facility.

Discharge Description

OUTFALL NUMBER	DISCHARGE SOURCE (1)	TREATMENT (2)	FLOW (3)
001	Town of Pocahontas, Pocahontas State Correctional Center, Abbs Valley	See Page 1 above, first paragraph	0.500 MGD

- (1) List operations contributing to flow      (2) List treatment units  
(3) Design flow

10. Sewage Sludge Use or Disposal: The dewatered sludge is shipped to the Tazewell County Landfill for final disposal.
11. Discharge Location Description: See attached Quadrangle; Number: 115D, Bramwell WVA, VA
12. Material Storage: None reported
13. Ambient Water Quality Information:

Mainstream Laurel Fork, a tributary of Bluestone River, is listed as impaired from the Curran Branch confluence, river mile 5.90, to the West Virginia line at river mile 1.35. The segment is not supporting the recreation and aquatic life uses goals.

The cause of the recreation use impairment is E.coli and the sources are sanitary sewer overflows (collection system failures), and septage disposal.

One cause of the aquatic life impairment is instream dissolved oxygen levels that do not meet the water quality criteria. The source is sewage discharges in unsewered areas. The other cause of aquatic life impairment is sedimentation/ siltation, as indicated in benthic-macroinvertebrate bio-assessments. The sources are listed as impacts from abandoned mine lands and silviculture activities.

A TMDL for fecal bacteria, dissolved oxygen, and general standard (benthic) was approved by EPA on 3/27/2007 and by the State Water Control on 4/11/2008. The TMDL contains an E.coli WLA for this discharge of 8.71 E+11 cfu/year and a sediment WLA of 20.73 Mg/year. This permit has an E.coli limit of 126 n(cfu)/100 ml (geometric mean) that is in compliance with the TMDL. This permit has total suspended limits of 57 kg/day (monthly average) and 85 kg/day (weekly average), which are in compliance with the TMDL.

## 14. Antidegradation Review &amp; Comments:

Tier I (X)    Tier II    Tier III

The State Water Control Board's Water Quality Standards includes an antidegradation policy (9 VAC 25-260-30). All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards.

Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters. The antidegradation review begins with a Tier determination. The receiving stream is Tier I, since the impaired (for dissolved oxygen, bacteria, and benthics) segment, listed on the 303 (D) report, is immediately downstream of the proposed discharge point.

15. Site Inspection: A reconnaissance inspection was conducted on 9/23/2010 by Danny L. Petty. A technical inspection was conducted on 4/25/2012 by Danny L. Petty. A reconnaissance inspection was conducted on 9/10/2013 by Jason McCroskey and Allen Cornett. A reconnaissance inspection was conducted on 6/08/2014 by Jason McCroskey.

## 16. Effluent Screening &amp; Limitations Development:

In the previous permit, PART I D.9. Special Condition - Water Quality Criteria Monitoring and ATTACHMENT A required the permittee to conduct water quality criteria monitoring for the substances in the Virginia Water Quality Standards (WQS). This data was submitted with the reissuance application. No water violations were noted and this monitoring is not being required in the reissuance permit.

Basis for Effluent Limitations (0.500 MGD):

PARAMETER	BASIS FOR LIMITS *	DISCHARGE LIMITS				MONITORING REQUIREMENTS	
		MONTHLY AVERAGE	WEEKLY AVERAGE	MINIMUM	MAXIMUM	FREQUENCY	SAMPLE TYPE
Flow	NA	NL	NA	NA	NL	Continuous	Totalizing Indicating & Recording
PH	2	NA	NA	6.0 SU	9.0 SU	1/Day	Grab
CBOD <sub>5</sub> (June-Dec.)	2,5	18 mg/l 34 k/d	27 mg/l 51 kg/d	NA	NA	3 Days/Week	8 Hour Composite
CBOD <sub>5</sub> (Jan.- May)	2,5	22 mg/l 42 k/d	33 mg/l 63 kg/d	NA	NA	3 Days/Week	8 Hour Composite
Total Suspended Solids	1	30 mg/l 57 kg/d	45 mg/l 85 kg/d	NA	NA	3 Days/Week	8 Hour Composite
E.coli**	2	126 n/100 ml	NA	NA	NA	1/Week***	Grab

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PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITS				MONITORING REQUIREMENTS	
		MONTHLY AVERAGE	WEEKLY AVERAGE	MINIMUM	MAXIMUM	FREQUENCY	SAMPLE TYPE
Ammonia Nitrogen (June-Dec.)	2,5	8.9 mg/l	8.9 mg/l	NA	NA	3 Days/Week	8 Hour Composite
Ammonia Nitrogen (Jan.-May)	2,5	12 mg/l	12 mg/l	NA	NA	3 Days/Week	8 Hour Composite
Dissolved Oxygen	2,5	NA	NA	6.5	NA	1/Day	Grab

- \*1. Federal Effluent guidelines
- 2. Water Quality-based Limits:
- 3. Best Engineering Judgment
- 4. Best Professional Judgment
- 5. Other (e.g. wasteload allocation model)

\*\* Geometric Mean

\*\*\* Between 10:00 a.m. and 4:00 p.m.

In the previous permit, PART I D.9. Special Condition - Water Quality Monitoring and ATTACHMENT A required the permittee to conduct water quality criteria monitoring for the substances in the Virginia Water Quality Standards (WQS). This data was submitted with the reissuance application. No water violations were noted and this monitoring is not being required in the reissuance permit.

16. Basis for Sludge Use & Disposal Requirements: VPDES Permit Regulation, 9VAC25-31-100 P; 220 B.2.; and 420 through 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on sludge use and disposal practices and to meet specified standards for sludge use and disposal.

Antibacksliding Statement: Since no effluent limitations are being relaxed in this reissuance, antibacksliding provisions of the Permit Regulation (9 VAC 25-31-220.1) do not apply.

18. Compliance Schedule: NA
19. Special Conditions:

**PART I.B Special Condition - Compliance Reporting**

**Rationale:** Authorized by VPDES Permit Regulation, 9VAC25-31-190 J 4 and 220 I. This condition is necessary when pollutants are monitored by the permittee and a maximum level of quantification and/or a specific analytical method is required in order to assess compliance with a permit limit or to compare effluent quality with a numeric criterion. The condition also establishes protocols for calculation of reported values.

**PART I.C. Special Condition - Control of Significant Dischargers**

**Rationale:** VPDES Permit Regulation, 9VAC25-31-730 through 900, and 40 CFR part 403 require certain existing and new sources of pollution to meet specified regulations.

**PART I.D. Other Requirements and Special Conditions:****1. 95% Capacity Reopener**

**Rationale:** Required by VPDES Permit Regulation, 9VAC25-31-200 B 4 for all POTW and PVOTW permits

**2. Indirect Dischargers**

**Rationale:** Required by VPDES Permit Regulation, 9VAC25-31-200 B 1 and B 2 for POTWs and PVOTWs that receive waste from someone other than the owner of the treatment works.

**3. CTC, CTO Requirement**

**Rationale:** Required by the Code of Virginia § 62.1-44.19: Sewage Collection and Treatment Regulations, 9VAC25-790.

**4. Operation and Maintenance Manual Requirement**

**Rationale:** Required by the Code of Virginia § 62.1-44.19: Sewage Collection and Treatment Regulations, 9VAC25-790; VPDES Permit Regulation, 9VAC25-31-190 E.

**5. Licensed Operator Requirement**

**Rationale:** The VPDES Permit Regulation, 9VAC25-31-200 C and the Code of Virginia § 54.1-2300 et seq, Board for Waterworks and Wastewater Works Operators and Onsite Sewage System Professional Regulations (18VAC160-20-10 et seq.), require licensure of operators.

**6. Reliability Class**

**Rationale:** Required by the Sewage Collection and Treatment Regulations, 9VAC25-790 for all municipal facilities.

**7. Treatment Works Closure Plan**

**Rationale:** This condition establishes the requirement to submit a closure plan for the treatment works if the treatment facility is being replaced or is expected close. This is necessary to ensure treatment works are properly closed so that the risk of untreated waste water discharge, spills, leaks, or other exposure to raw materials is eliminated and water quality is maintained. Section 62.1-44.21 requires every owner to furnish when requested plans, specifications, and other pertinent informations as may be necessary to determine the effect of the wastes from this discharge on the quality of state waters, or such other information as may be necessary to accomplish the purpose of the State Water Control Law.

**8. Section 303(d) List (TMDL) Reopener**

**Rationale:** Section 303(d) of the Clean Water Act requires the total maximum daily loads (TMDLs) be developed for streams listed as impaired. This special condition is to allow the permit to be reopened if necessary to bring it in compliance with any applicable TMDL approved for the receiving stream. The reopener recognizes that, according to Section 402(o)(1) of the Clean Water Act, limits and/or conditions may be either more or less stringent than those contained in the permit. Specifically, they can be relaxed if they are the result of a TMDL, basin plan, or other wasteload allocation prepared under Section 303 of the Act.

**9. Sludge Reopener**

**Rationale:** Required by VPDES Permit Regulation, 9VAC25-31-220 C for all permits issued to treatment works treating domestic sewage.

**10. Sludge Use and Disposal**

**Rationale:** VPDES Permit Regulation, 9VAC25-31-100 P; 220 B.2.; and 420 through 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on sludge use and disposal practices and to meet specified standards for sludge use and disposal.

**PART II, Conditions Applicable to All Permits**

**Rationale:** VPDES Permit Regulation, 9 VAC 25-31-190 requires all VPDES permits to contain or specifically cite the conditions listed.

20. Changes from the previous permit contained in the reissuance permit:

This permit has been drafted using guidance provided in the March 27, 2014 permit manual which is updated on a continual basis, resulting in minor changes to permit requirements and conditions.

PART I C.1. - The quantification level (QL) for CBOD<sub>5</sub> has been changed from 5 mg/l to 2 mg/l in accordance with recommendations from the Office of Water Permits and Standard Methods 22<sup>nd</sup> Edition.

The special condition for submittal of an operations and maintenance manual has been updated and does not require DEQ approval unless requested by DEQ.

AS explained in Item 15 above, the Special Condition - Water Quality Monitoring and ATTACHMENT A are not being required in the reissuance permit.

PART II of the permit has been updated to comply with the March 27, 2014 updated permit manual as follows:

A.1.c - Added VELAP special condition which requires samples to be analyzed in accordance with 1VAC30-45, Certification for Noncommercial Environmental Laboratories, or 1VAC30-46, Accreditation for Commercial Environmental Laboratories per VPDES Permit Manual.

A.2. - Clarified that operational or process control samples or measurements do not need to follow procedures approved under Title 40 Code of Federal Regulations Part 136 or be analyzed in accordance with 1VAC30-45, Certification for Noncommercial Environmental Laboratories, or 1VAC30-46, Accreditation for Commercial Environmental Laboratories.

I.3. - Added language which allows for the Reporting of Non-Compliance activities to be submitted online in addition to reporting them by means of a telephone call.

Reduced Monitoring: The WWTP facility does not qualify for reduced monitoring under EPA's Interim Guidance for Performance Based Reductions

of NPDES Permit Monitoring Frequencies, since DEQ issued an NOV and several warning letters during the previous permit cycle.

- 22. Variances/Alternate Limits or Conditions: None
- 23. Regulation of Users: 9 VAC 25-31-280 B 9 - NA
- 24. Public Notice Information required by 9 VAC 25-31-280 B:

**HOW TO COMMENT AND/OR REQUEST A PUBLIC HEARING:** DEQ accepts comments and requests for public hearing by hand delivery, e-mail, fax or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all the persons represented by the commenter/requester. A request for a public hearing must also include; 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit and suggested revisions. A public hearing may be held, including another comment period, if public response is significant, based on individual requests for a public hearing, and there are substantial, disputed issues relevant to the permit.

**CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS AND ADDITIONAL INFORMATION:**

Name: Fred M. Wyatt

Address: DEQ, Southwest Regional Office, 355-A Deadmore Street,  
Abingdon, VA 24210; Phone: (276) 676-4810 E-mail:  
frederick.wyatt@deq.virginia.gov Fax: (276) 676-4899

25. Additional Comments:

*Application Waivers:* The staff is granting testing waivers for the following parameters in Part B.6 of Application Form 2A: TKN, nitrate plus nitrite nitrogen, oil and grease, phosphorus, and total dissolved solids since these are not permit parameters.

*Permit Fee:* A reissuance application fee is not required. However, an annual maintenance fee is required by October 1 of each year.

*Threatened and Endangered (T&E) Species:* According to the attached printout from the Department of Game and Inland Fisheries (DGIF), Virginia Fish and Wildlife Information Service, the Tennessee Heelsplitter (*Lasmigona holstonia*) has been identified within a two mile radius of the discharge. The reissuance of this permit is not on the T&E coordination review lists for the Department of Conservation and Recreation (DCR), DGIF, or the US Fish and Wildlife Service (USFS).

*Previous Board Action:* None

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*Permit History:* VPDES Permit No. VA0091588 was issued on December 22, 2004, was reissued on December 22, 2009, and has an expiration date of December 21, 2014.

*Staff Comments:*

*Public Comments:*

26. 303(d) listed segments (TMDL): See Item 13 above.

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PLANNING CONCURRENCE FOR MUNICIPAL VPDES PERMIT

PERMIT NO. VA0091588

FACILITY: Northern Tazewell County WWTF

COUNTY: Tazewell

- [ ] 1. The discharge is in conformance with the existing planning documents for the area.
- [ ] 2. The discharge is not addressed in any planning document but will be included, if required, when the plan is updated.
- [ ] 3. Other.

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TMDL Coordinator

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Date

## ATTACHMENT 1

### Treatment Process Diagrams & Description



# COMMONWEALTH of VIRGINIA

## DEPARTMENT OF ENVIRONMENTAL QUALITY

### SOUTHWEST REGIONAL OFFICE

L. Preston Bryant, Jr.  
Secretary of Natural Resources

355 Deadmore Street, P.O. Box 1688, Abingdon, Virginia 24212  
(276) 676-4800 Fax (276) 676-4899  
[www.deq.virginia.gov](http://www.deq.virginia.gov)

David K. Paylor  
Director

Dallas R. Sizemore  
Regional Director

October 30, 2008

SUBJECT: Tazewell County  
Tazewell County PSA  
Northern Tazewell County  
Regional Wastewater Treatment Facility  
Certificate to Operate

Mr. Jim Spencer  
Tazewell County PSA  
PO Box 190  
North Tazewell, VA 24630

Dear Mr. Spencer:

In accordance with Section 790 of the Commonwealth of Virginia *Sewage Collection and Treatment Regulations*, enclosed is a revised Certificate to Operate (CTO) for the Northern Tazewell County Regional Wastewater Treatment Facility, located in Tazewell County. This CTO includes the Belt Filter Press and Aerobic Digester.

Additionally enclosed are copies of the Engineer's Certificate, dated October 6, 2008

Sincerely,

A handwritten signature in black ink, appearing to read "Daniel P. Scott".

Daniel P. Scott, PE  
Area Engineer (Southwest)  
Department of Environmental Quality  
Office of Wastewater Engineering

c: DEQ-SWRO  
Thompson & Litton  
Cumberland Plateau Health District - Dr. John Dreyzehner  
DEQ-CAP - Charles Via  
DEQ-OWE - Archives

## CERTIFICATE TO OPERATE

**Owner:** Tazewell County PSA

**Facility/System Name:** Northern Tazewell County Regional Wastewater Treatment Facility

**VPDES Permit Number:** VA0091588

**Description of Facility/System:** An 0.5 MGD STW comprised of a duplex influent pump station, mechanical screen with manual cleaned bypass, teacup grit removal system, duplex rectangular SBR, post equalization basin, UV disinfection system, cascade aeration, NPW system, belt filter press and aerobic digesters.

The collection system includes two 300 gpm duplex submersible sewage pump stations, servicing the main collection lines for the Town of Pocahontas and Tazewell County influents.

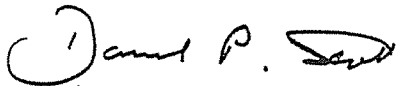
The Reliability Class for this facility is Class III.

**This CTO is conditional upon the completion, testing, inspection and approval of the belt filter press system.**

### AUTHORIZATION TO OPERATE:

The owner is authorized to operate this facility in accordance with Section 790 of the Commonwealth of Virginia *Sewage Collection and Treatment Regulations*.

Issued By:



Area Engineer (Southwest)  
Department of Environmental Quality  
Office of Wastewater Engineering

October 30, 2008  
Date

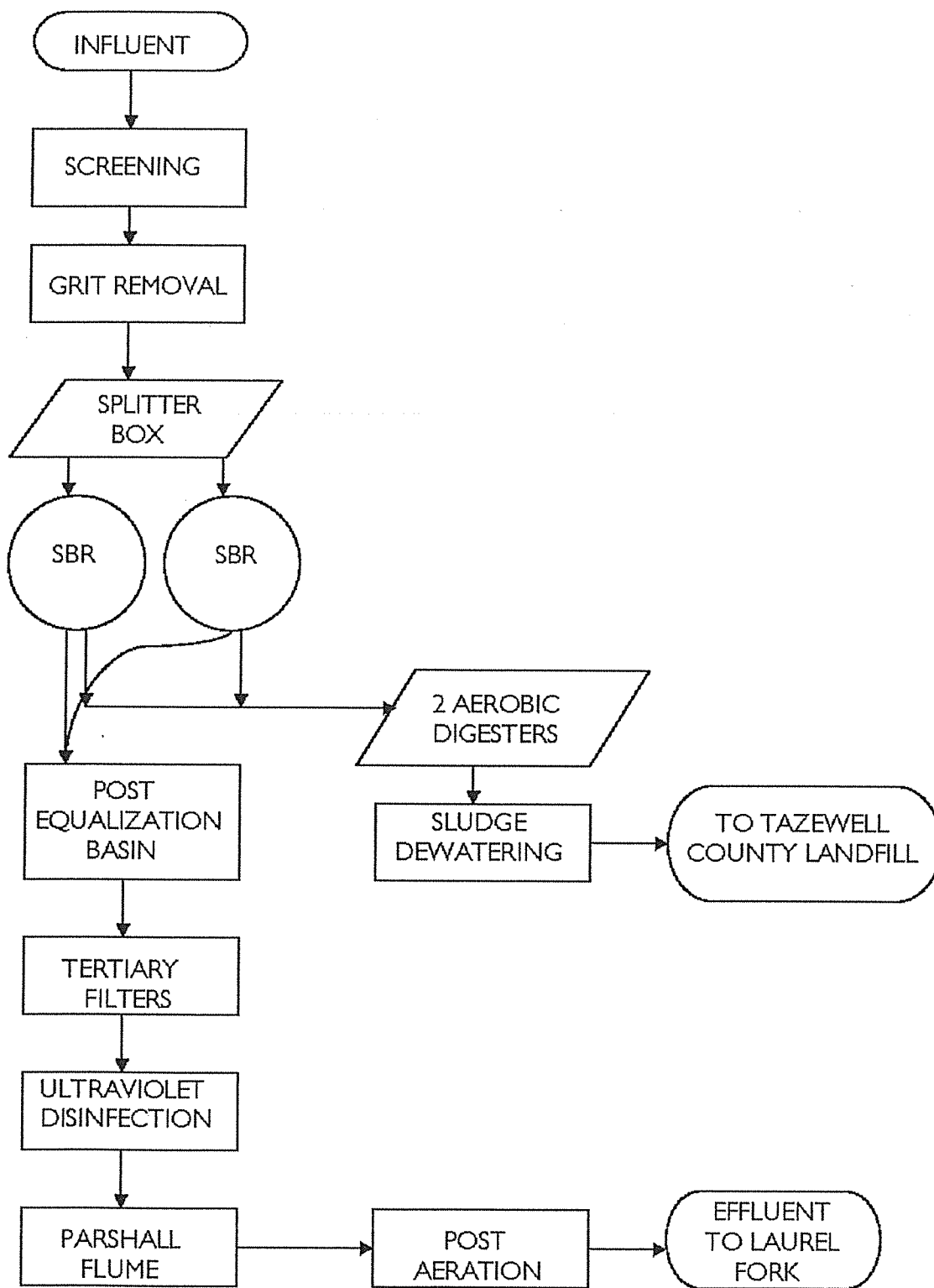
Northern Tazewell Wastewater Treatment Facility  
ADDITIONAL INFORMATION

NPDES FORM 2A SECTION B.3  
SLUDGE PERMIT APPLICATION SECTION A.6

Raw sewage enters the pretreatment unit from the main pump station. Within the unit, sewage passes through a mechanical screen. The flow goes through a hydraulic vortex grit removal system before leaving the headworks.

After preliminary treatment, the sewage enters a splitter box. The splitter box divides the flow between two sequencing batch reactors (SBRs), which provide aeration, clarification, and removal of nutrients and suspended solids. Waste activated sludge is pumped into two aerobic digesters. Once the sludge is stabilized, it is pumped to a sludge press. The dewatered sludge is taken to Tazewell County Landfill for disposal.

The effluent from the SBRs will flow into a post equalization basin. Next, the flow passes through an ultraviolet light disinfection system. The flow is directed through a parshall flume with an ultrasonic level sensor and then to post aeration. Effluent leaving the system is directed through an outfall line to Laurel Fork.



DESIGNED BY  
DRAWN BY D.J.L.  
PROJECT NO.  
7848-13

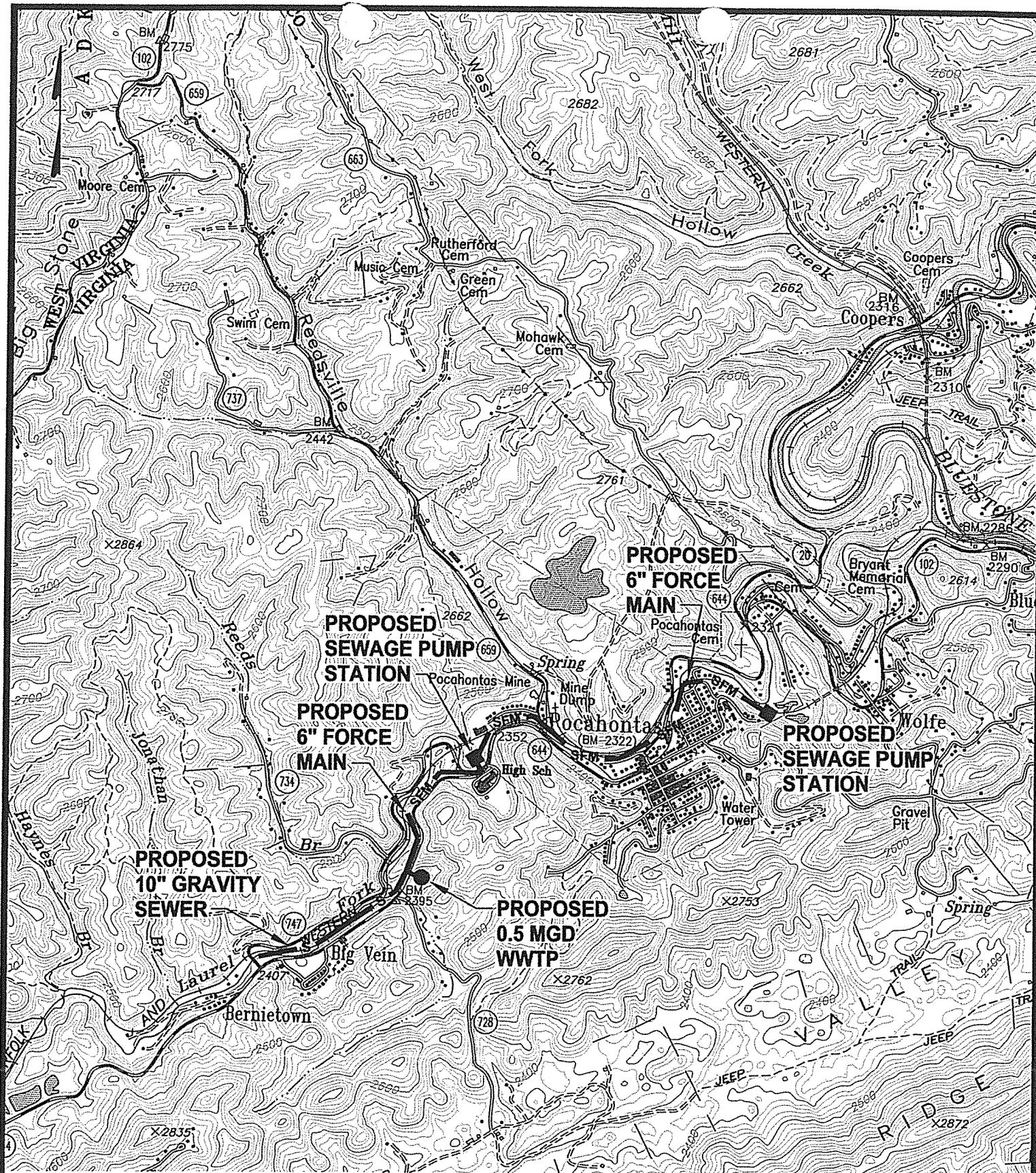
SCALE  
NOT TO SCALE  
DATE  
SEPT. 2004

**SCHEMATIC  
FOR THE  
NORTHERN TAZEWELL COUNTY  
WASTEWATER TREATMENT FACILITY**

  
**THOMPSON & LITTON**  
P.O. Box 1107  
101 East Main Street  
Wise, Virginia 24293

SHEET  
**EXHIBIT  
II**

ATTACHMENT 2  
Topographic Map



## PROPOSED FACILITIES LOCATION MAP

SOURCE: BRAMWELL WEST VA. - VA.  
U.S.G.S. QUADRANGLE

DESIGNED BY	SCALE 1" = 2000'
DRAWN BY	DATE SEPTEMBER 2004
PROJECT NO. 7848-13	

NORTHERN TAZEVELL WASTEWATER TREATMENT FACILITY  
FOR THE  
TAZEVELL COUNTY BOARD OF SUPERVISORS



SHEET  
EXHIBIT  
I

**ATTACHMENT 3**

**Permit Limitations Development**

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY  
Office of Water Quality Assessments  
629 East Main Street P.O. Box 10009 Richmond, Virginia 23219

SUBJECT: Flow Frequency Determination  
Pocahontas STP - #VA0029602

TO: Fred Wyatt, SWRO

FROM: Paul E. Herman, P.E., WQAP *Paul*

DATE: June 14, 1999

COPIES: Ron Gregory, Charles Martin, File

RECEIVED  
JUN 15 1999  
DEQ-SWRO

This memo supersedes my August 16, 1994, memo to you concerning the subject VPDES permit.

The Pocahontas STP discharges to the Laurel Fork near Pocahontas, VA. Stream flow frequencies are required at this site by the permit writer for the purpose of calculating effluent limitations for the VPDES permit.

The USGS conducted several flow measurements on the Laurel Fork from 1993 to 1994. The measurements were made just upstream of the subject VPDES discharge point. The measurements made by the USGS correlated very well with the same day daily mean values from the continuous record gage on the Bluestone River near Falls Mills, VA (#03177710). The measurements and daily mean values were plotted on a logarithmic graph and a best fit line was drawn through the data points. The required flow frequencies from the reference gage were plotted on the regression line and the associated flow frequencies at the measurement site/discharge point were determined from the graph. The data for the reference gage and the measurement site/discharge point are presented below:

Bluestone River at Falls Mills, VA (#03177710):

Drainage Area = 44.2 mi<sup>2</sup>

1Q10 = 7.0 cfs	High Flow 1Q10 = 7.7 cfs
7Q10 = 8.7 cfs	High Flow 7Q10 = 13.0 cfs
30Q5 = 12.1 cfs	HM = 29 cfs

Laurel Fork at Pocahontas STP (#03177750):

Drainage Area = 14.6 mi<sup>2</sup>

1Q10 = 0.14 cfs = .091 mld	High Flow 1Q10 = 0.17 cfs = 0.11 mld
7Q10 = 0.20 cfs = .129 mld	High Flow 7Q10 = 0.37 cfs = 0.239 mld
30Q5 = 0.32 cfs = .207 mld	HM = 1.30 cfs = 0.84 mld
30Q10 = 0.32 cfs = .207 mld	

The high flow months are January through May. This analysis assumes there are no significant discharges, withdrawals or springs influencing the flow in the Laurel Fork upstream of the discharge point.

If there are any questions concerning this analysis, please let me know.

# MODEL FILE AND STREAM INSPECTION REPORT FORM

Page 1

Discharge Name: Big Vein Prison Site/ Pocahontas STP Upgrade (News

Location: Rt-644, Tazewell Co.

Model File Path/Name: \_\_\_\_\_

Inspection Date: 1/1

Modeler: F. M. Wyatt

## General Stream Information:

Stream Name: Laurel Fork

Basin: New River Section: 1 Class: IV Special Standards: None

Are the standards for this stream violated due to natural causes? (Y/N) N

Is the stream correctly classified? (Y/N) Y

If "N", what is the correct classification? \_\_\_\_\_

## Model Segmentation:

Number of segments to be modeled: 1

## Flow Gauge / Flow Frequency Information (Attach Copy):

Gauge Used: Laurel Fork at Pocahontas

Drainage Area/Observed Flow At The Gauge: 14.6 sq. mi./mgd

Drainage Area/Observed Flow At The Start of The Model: 14.6 - 3.9 = 10.7 sq. mi./mgd

7Q10 of the Gauge: 0.129 mgd

Flow Adjustment for Springs or Dischargers: \_\_\_\_\_ mgd

## Background Water Quality:

Elevation at the Start of the model: 2378 ft above mean sea level

Elevation at the End of the model: 2265 ft above mean sea level

Critical Temperature: 20.9 °C (attach data and analysis)

Ambient Monitoring Gauge Used: Laurel Fork at Pocahontas

## Additional Discharges Information:

Is there a discharger within 3 miles upstream of the proposed discharge? (Y/N) N

Does antidegradation apply to this analysis? (Y/N) N If so, which segment(s)? \_\_\_\_\_

Is any segment on the current 303(d) list for D.O. violations? (Y/N) N

Is any segment of the model within an approved D.O. TMDL segment? (Y/N) N

Is any discharge to the model intermittent? (Y/N) N

Any dams in stream section being modeled? (Y/N) N

## Notes/Sketch:

$$1Q10 = 0.091 \times (10.7/14.6) = 0.067 \text{ mgd}$$

$$7Q10 = 0.129 \times (10.7/14.6) = 0.095 \text{ mgd}$$

$$3Q10 = 0.207 \times (10.7/14.6) = 0.15 \text{ mgd}$$

$$\text{Wet } 1Q10 = 0.11 \times (10.7/14.6) = 0.081 \text{ mgd}$$

$$\text{Wet } 7Q10 = 0.239 \times (10.7/14.6) = 0.175 \text{ mgd}$$

$$3Q10 = 0.207 \times (10.7/14.6) = 0.15 \text{ mgd}$$

# MODEL FILE AND STREAM INSPECTION REPORT FORM

Page 2

(Fill In This Page FOR EACH SEGMENT To Be Modeled)

Segment Number:		
Reason for Defining Segment:	Discharge at Beginning of Segment	<input checked="" type="checkbox"/>
	Physical Change at Beginning of Segment	
	Tributary at Beginning of Segment	
Length of Segment (mi.): <u>3.7</u>		<u>3.7</u>
Drainage Area at Start of Segment (sq. mi.):		<u>10.7</u>
Drainage Area at End of Segment (sq. mi.):		<u>14.6</u>
Elevation at Start of Segment (ft.):		<u>2378</u>
Elevation at End of Segment (ft.):		<u>2265</u>
If Discharge or Tributary At Beginning of Segment, Complete the Following:		
Discharge/Tributary Name: <u>Big Vein Prison Site STP</u>		
Discharge/Tributary Temperature (C): (If different from background ambient)		<u>20</u>
Critical Discharge/Tributary Flow (mgd): (Design/Permitted Flow or 7Q10 Condition) (use permitted or design flow for discharges, 7Q10 flow from flow frequency analysis for tributaries)		<u>0.500</u>
For Dischargers Only: (use permitted Concentrations)	CBOD <sub>5</sub> (mg/l):	<u>1.8</u>
	TKN (mg/l):	<u>11.9 dry</u>
	D.O. (mg/l):	<u>6.5</u>
General Type of Cross Section in Segment: (7Q10 Condition) Rectangular <input checked="" type="checkbox"/> Triangular ___ Deep Narrow U ___ Wide Shallow Arc ___ Irregular ___ No Defined Channel ___		
General Channel Characteristics of Segment: (7Q10 Condition) Mostly Straight ___ Moderately Meandering <input checked="" type="checkbox"/> Severely Meandering ___ No Defined Channel ___		
Does the stream have a pool and riffle character (Y/N)? (7Q10 Condition)		<input checked="" type="checkbox"/>
If "Y":	% of length that is pools <u>50</u>	Average depth of pools (ft) <u>1.5</u>
	% of length that is riffles <u>50</u>	Average depth of riffles (ft) <u>1</u>
Bottom:	Sand ___ Silt ___ Gravel ___ Small Rock <input checked="" type="checkbox"/> Large Rock ___ Boulders ___	
Sludge Deposits:	None <input checked="" type="checkbox"/> Trace ___ Light ___ Heavy ___	
Plants:	Rooted: None <input checked="" type="checkbox"/> Few ___ Light ___ Heavy ___	
	Algae: None <input checked="" type="checkbox"/> Film on Edges Only ___ Film on Entire Bottom ___	
Projected 7Q10 Width of Segment (ft): (must be projected by modeler based on site visit)		<u>10</u>
Projected 7Q10 Depth of Segment (ft): (can be calculated by model based on width)		<u>1.5</u>
Projected 7Q10 Velocity of Segment (ft): (can be calculated by model based on width)		<u>0.38</u>
Does the water have an evident green color? (Y/N)		<u>N</u>

15.3 m

**MODEL FILE AND STREAM INSPECTION REPORT FORM**  
Page 2

(Fill In This Page FOR EACH SEGMENT To Be Modeled)

<b>Segment Number:</b>		
<b>Reason for Defining Segment:</b>	Discharge at Beginning of Segment	
	Physical Change at Beginning of Segment	
	Tributary at Beginning of Segment	
<b>Length of Segment (mi.):</b>		
<b>Drainage Area at Start of Segment (sq. mi.):</b>		
<b>Drainage Area at End of Segment (sq. mi.):</b>		
<b>Elevation at Start of Segment (ft.):</b>		
<b>Elevation at End of Segment (ft.):</b>		
<b>If Discharge or Tributary At Beginning of Segment, Complete the Following:</b>		
<b>Discharge/Tributary Name:</b>		
<b>Discharge/Tributary Temperature (C):</b> (If different from background ambient)		
<b>Critical Discharge/Tributary Flow (mgd):</b> (Design/Permitted Flow or 7Q10 Condition) (use permitted or design flow for discharges, 7Q10 flow from flow frequency analysis for tributaries)		
<b>For Dischargers Only:</b> (use permitted Concentrations)	<b>CBOD<sub>5</sub> (mg/l):</b>	
	<b>TKN (mg/l):</b>	
	<b>D.O. (mg/l):</b>	
<b>General Type of Cross Section in Segment: (7Q10 Condition)</b> Rectangular ___ Triangular ___ Deep Narrow U ___ Wide Shallow Arc ___ Irregular ___ No Defined Channel ___		
<b>General Channel Characteristics of Segment: (7Q10 Condition)</b> Mostly Straight ___ Moderately Meandering ___ Severely Meandering ___ No Defined Channel ___		
<b>Does the stream have a pool and riffle character (Y/N)? (7Q10 Condition)</b>		
<b>If "Y":</b>	<b>% of length that is pools</b> _____	<b>Average depth of pools (ft)</b> _____
	<b>% of length that is riffles</b> _____	<b>Average depth of riffles (ft)</b> _____
<b>Bottom:</b>	Sand ___ Silt ___ Gravel ___ Small Rock ___ Large Rock ___ Boulders ___	
<b>Sludge Deposits:</b>	None ___ Trace ___ Light ___ Heavy ___	
<b>Plants:</b>	<u>Rooted:</u>	None ___ Few ___ Light ___ Heavy ___
	<u>Algae:</u>	None ___ Film on Edges Only ___ Film on Entire Bottom ___
<b>Projected 7Q10 Width of Segment (ft):</b> (must be projected by modeler based on site visit)		
<b>Projected 7Q10 Depth of Segment (ft):</b> (can be calculated by model based on width)		
<b>Projected 7Q10 Velocity of Segment (ft):</b> (can be calculated by model based on width)		
<b>Does the water have an evident green color? (Y/N)</b>		

# MODEL FILE AND STREAM INSPECTION REPORT FORM

Page 2

(Fill In This Page FOR EACH SEGMENT To Be Modeled)

<b>Segment Number:</b>		
<b>Reason for Defining Segment:</b>	Discharge at Beginning of Segment	
	Physical Change at Beginning of Segment	
	Tributary at Beginning of Segment	
<b>Length of Segment (mi.):</b>		
<b>Drainage Area at Start of Segment (sq. mi.):</b>		
<b>Drainage Area at End of Segment (sq. mi.):</b>		
<b>Elevation at Start of Segment (ft.):</b>		
<b>Elevation at End of Segment (ft.):</b>		
<b>If Discharge or Tributary At Beginning of Segment, Complete the Following:</b>		
<b>Discharge/Tributary Name:</b>		
<b>Discharge/Tributary Temperature (C):</b> (If different from background ambient)		
<b>Critical Discharge/Tributary Flow (mgd):</b> (Design/Permitted Flow or 7Q10 Condition) (use permitted or design flow for discharges, 7Q10 flow from flow frequency analysis for tributaries)		
<b>For Dischargers Only:</b> (use permitted Concentrations)	<b>CBOD<sub>5</sub> (mg/l):</b>	
	<b>TKN (mg/l):</b>	
	<b>D.O. (mg/l):</b>	
<b>General Type of Cross Section in Segment: (7Q10 Condition)</b> Rectangular <input type="checkbox"/> Triangular <input type="checkbox"/> Deep Narrow U <input type="checkbox"/> Wide Shallow Arc <input type="checkbox"/> Irregular <input type="checkbox"/> No Defined Channel <input type="checkbox"/>		
<b>General Channel Characteristics of Segment: (7Q10 Condition)</b> Mostly Straight <input type="checkbox"/> Moderately Meandering <input type="checkbox"/> Severely Meandering <input type="checkbox"/> No Defined Channel <input type="checkbox"/>		
<b>Does the stream have a pool and riffle character (Y/N)? (7Q10 Condition)</b>		
<b>If "Y":</b>	<b>% of length that is pools</b> _____	<b>Average depth of pools (ft)</b> _____
	<b>% of length that is riffles</b> _____	<b>Average depth of riffles (ft)</b> _____
<b>Bottom:</b>	Sand <input type="checkbox"/> Silt <input type="checkbox"/> Gravel <input type="checkbox"/> Small Rock <input type="checkbox"/> Large Rock <input type="checkbox"/> Boulders <input type="checkbox"/>	
<b>Sludge Deposits:</b>	None <input type="checkbox"/> Trace <input type="checkbox"/> Light <input type="checkbox"/> Heavy <input type="checkbox"/>	
<b>Plants:</b>	<b>Rooted:</b>	None <input type="checkbox"/> Few <input type="checkbox"/> Light <input type="checkbox"/> Heavy <input type="checkbox"/>
	<b>Algae:</b>	None <input type="checkbox"/> Film on Edges Only <input type="checkbox"/> Film on Entire Bottom <input type="checkbox"/>
<b>Projected 7Q10 Width of Segment (ft):</b> (must be projected by modeler based on site visit)		
<b>Projected 7Q10 Depth of Segment (ft):</b> (can be calculated by model based on width)		
<b>Projected 7Q10 Velocity of Segment (ft):</b> (can be calculated by model based on width)		
<b>Does the water have an evident green color? (Y/N)</b>		

Effluent flow = .4 MGD  
Stream 7Q10 flow = .142 MGD  
Width = 10 ft  
Bottom scale = 4  
Channel has normal irregularities  
Stream 1Q10 flow = .103 MGD  
Slope (ft/ft) = .004798

CHRONIC RESULTS

7Q10 depth = 0.28 ft  
7Q10 velocity = 0.30 ft/sec = 4.9 mi / day  
Mixing length @ 7Q10 = 211 ft =  
Residence time = 0.008 days

\*\*COMPLETE MIX MAY BE USED FOR THE CHRONIC WLA\*\*  
Percent of 7Q10 to be used for WLA<sub>c</sub> = 100%

ACUTE RESULTS

1Q10 depth = 0.26 ft  
1Q10 velocity = 0.29 ft/sec = 4.8 mi / day  
Mixing length @ 1Q10 = 219 ft =  
Residence time = 0.207 hours

\*\*COMPLETE MIX MAY BE USED FOR THE ACUTE WLA\*\*  
Percent of 1Q10 to be used for WLA<sub>a</sub> = 100%

Use print screen for hard copy

C:\MIXPROG>

*Laurel Fork*

*Slope 0.0048 ft/ft*

*5280 x 1.5 mi = 7920 ft*

*2305 - 2267 = 38 ft*

*$\frac{38}{7920} = 0.0048$*

PGM=RET

9-LRR002.19 VA9-01FX0060 VA9-1X0060  
37 18 16.0 081 20 25.0 1  
RT. 644 BRIDGE IN POCAHONTAS  
51185 VIRGINIA TAZEWELL  
02-OHIO RIVER + KANAWHA  
9-NEW  
21VASWCB 770106 HQ 05050002012

/TYPE/AMBT/STREAM

0001.040 OFF

0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	MEDIUM	SMK OR DEPTH (FT)	00010 WATER TEMP CENT	00400 PH	00299 DO PROBE MG/L	00900 TOT HARD CACO3 MG/L	00619 UN-IONZD NH3-NH3 MG/L
94/02/15	1158	WATER	0.983999	6.3	6.84	12.4	89	High
94/04/20	1233	WATER	0.983999	15.1	7.73	10.3	110	High
94/07/28	1029	WATER	0.983999	17.1	6.71	7.7	87	Low
94/10/27	1111	WATER	0.983999	9.1		2.2	200	Low
95/01/12	1115	WATER	0.983999	8.7	6.82	8.4	110	High
95/03/29	1330	WATER	0.983999	12.0	7.30	9.9	120	High
95/05/16	1017	WATER	0.983999	12.7	6.65	9.3	56	Low
95/07/11	1056	WATER	0.983999	20.5	6.91	3.8	191	Low
95/09/19	1305	WATER	0.983999	16.6	7.13	2.4	200	Low
95/11/14	0944	WATER	0.983999	4.9	6.96	8.9	119	Low
96/01/22	1129	WATER	0.983999	5.2	6.94	11.6	75	High
96/03/14	1010	WATER	0.983999	6.6	7.18	11.4	100	High
96/05/01	1112	WATER	0.983999	10.1	7.17	10.1	98	Low
96/07/10	1155	WATER	0.983999	19.5	7.31	2.2	186	Low
96/09/10	1050	WATER	0.983999	18.9	6.83	3.9	168	Low
96/11/04	1045	WATER	0.983999	6.4	7.20	7.3	198	Low
97/01/13	1030	WATER	0.983999	4	7.43	12.7	118	High
97/03/19	1100	WATER	0.983999	8.0	6.97	10.6	69	High
97/05/12	1135	WATER	0.983999	12.5	7.15	9.8	115	High
97/07/16	0950	WATER	0.983999				170	Low
97/09/08	1010	WATER	0.983999	17.0	6.73	4.5	202	Low
97/11/24	1155	WATER	0.983999	4.5	7.26	7.2	196	Low
98/03/11	1210	WATER	0.983999	3.0	7.18	13.2	95	High
98/05/05	1130	WATER	0.983999	12.0	7.17	9.6	88	High
98/07/22	1030	WATER	0.983999	21.0	7.07	1.9	163	Low
98/08/24	1115	WATER	0.983999	20.9	6.87	3.2	185	Low
98/10/19	1055	WATER	0.983999	15.6	6.76	2.7	212	Low
98/12/21	1055	WATER	0.983999	6.6	7.24	5.9	190	Low

1THAT'S ALL FOLKS

High Flow Period  
90th % temp.: 12.7°C  
90th % PH : 7.43

Low Flow Period:  
90th. % temp.: 20.9°C  
90th % PH : 7.26

# Calculation of Total Ammonia Nitrogen Limits (continued)

## At Proposed Discharge

The water quality wasteload allocations (AWLAs) are calculated as follows, assuming a background concentration of 0:

$$AWLA_{ad} = \text{acute dry WLA} = \frac{[AO_d (Qs-1_{dry} + Q_e) - Qs-1_{dry}(\text{background})]}{Q_e}$$

$$AWLA_{ad} = \text{acute dry WLA} = \frac{[26 (0.067 + 0.500) - 0]}{0.500} = 29.5 \text{ mg/l}$$

$$AWLA_{aw} = \text{acute wet WLA} = \frac{[AO_w (Qs-1_{wet} + Q_e) - Qs-1_{wet}(\text{background})]}{Q_e}$$

$$AWLA_{aw} = \text{acute wet WLA} = \frac{[23 (0.081 + 0.500) - 0]}{0.500} = 26.7 \text{ mg/l}$$

$$CWLA_{cd} = \text{chronic dry WLA} = \frac{[CO_d (Qs-7_{dry} + Q_e) - Qs-7_{dry}(\text{background})]}{Q_e}$$

$$CWLA_{cd} = \text{chronic dry WLA} = \frac{[3.4 (0.15 + 0.500) - 0]}{0.500} = 4.4 \text{ mg/l}$$

$$CWLA_{cw} = \text{chronic wet WLA} = \frac{[CO_w (Qs-7_{wet} + Q_e) - Qs-7_{wet}(\text{background})]}{Q_e}$$

$$CWLA_{cw} = \text{chronic wet WLA} = \frac{[4.7 (0.15 + 0.500) - 0]}{0.500} = 6.1 \text{ mg/l}$$

# New Discharge Point

modout.txt

"Model Run For E:\PocahontasBigVein.mod On 10/22/2003 1:30:41 PM"

"Model is for LAUREL FORK."

"Model starts at the BIGVEINPOCAHONTAS STP discharge."

"Background Data"

"7Q10"	"cBOD5"	"TKN"	"DO"	"Temp"
"(mgd)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"deg C"
.0945,	2,	0,	7.381,	20.9

"Discharge/Tributary Input Data for Segment 1"

"Flow"	"cBOD5"	"TKN"	"DO"	"Temp"
"(mgd)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"deg C"
.5,	18,	11.9,	6.5,	20

8.9 NH3-N

"Hydraulic Information for Segment 1"

"Length"	"Width"	"Depth"	"Velocity"
"(mi)"	"(ft)"	"(ft)"	"(ft/sec)"
3.7,	7.999,	.306,	.376

"Initial Mix Values for Segment 1"

"Flow"	"DO"	"cBOD"	"nBOD"	"DOSat"	"Temp"
"(mgd)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"deg C"
.5945,	6.64,	38.639,	32.409,	8.335,	20.14311

"Rate Constants for Segment 1. - (All units Per Day)"

"k1"	"k1@T"	"k2"	"k2@T"	"kn"	"kn@T"	"BD"	"BD@T"
1.2,	1.208,	18.324,	18.387,	.5,	.506,	0,	0

"Output for Segment 1"

"Segment starts at BIGVEINPOCAHONTAS STP"

"Total", "Segm."

"Dist."	"Dist."	"DO"	"cBOD"	"nBOD"
"(mi)"	"(mi)"	"(mg/l)"	"(mg/l)"	"(mg/l)"
0,	0,	6.64,	38.639,	32.409
.1,	.1,	6.2,	37.888,	32.144
.2,	.2,	5.888,	37.151,	31.881
.3,	.3,	5.671,	36.429,	31.62
.4,	.4,	5.524,	35.721,	31.361
.5,	.5,	5.428,	35.027,	31.104
.6,	.6,	5.371,	34.346,	30.849
.7,	.7,	5.342,	33.678,	30.597
.8,	.8,	5.333,	33.023,	30.347
.9,	.9,	5.339,	32.381,	30.099
1,	1,	5.356,	31.751,	29.853
1.1,	1.1,	5.381,	31.134,	29.609
1.2,	1.2,	5.412,	30.529,	29.367
1.3,	1.3,	5.447,	29.935,	29.127

modout.txt

1.2,	1.2,	5.432,	30.027,	35.219
1.3,	1.3,	5.497,	29.197,	34.888
1.4,	1.4,	5.563,	28.39,	34.56
1.5,	1.5,	5.629,	27.606,	34.235
1.6,	1.6,	5.695,	26.843,	33.913
1.7,	1.7,	5.76,	26.101,	33.594
1.8,	1.8,	5.824,	25.38,	33.278
1.9,	1.9,	5.886,	24.679,	32.965
2,	2,	5.947,	23.997,	32.655
2.1,	2.1,	6.007,	23.334,	32.348
2.2,	2.2,	6.065,	22.689,	32.044
2.3,	2.3,	6.122,	22.062,	31.743
2.4,	2.4,	6.178,	21.452,	31.445
2.5,	2.5,	6.232,	20.859,	31.15
2.6,	2.6,	6.285,	20.283,	30.857
2.7,	2.7,	6.337,	19.723,	30.567
2.8,	2.8,	6.387,	19.178,	30.28
2.9,	2.9,	6.436,	18.648,	29.996
3,	3,	6.484,	18.133,	29.714
3.1,	3.1,	6.531,	17.632,	29.435
3.2,	3.2,	6.576,	17.145,	29.159
3.3,	3.3,	6.62,	16.671,	28.885
3.4,	3.4,	6.663,	16.21,	28.614
3.5,	3.5,	6.705,	15.762,	28.345
3.6,	3.6,	6.746,	15.326,	28.079
3.7,	3.7,	6.786,	14.903,	27.815

"END OF FILE"

# New Discharge Point

modout.txt

\*\*\*\*SEASONAL RUN\*\*\*\*

"Wet Season is from January to May."

"Model Run For E:\PocahontasBigVein.mod On 10/22/2003 1:41:17 PM"

"Model is for LAUREL FORK."

"Model starts at the BIGVEINPOCAHONTAS STP discharge."

"Background Data"

"7Q10",	"cBOD5",	"TKN",	"DO",	"Temp"
"(mgd)",	"(mg/l)",	"(mg/l)",	"(mg/l)",	"deg C"
.1752,	2,	0,	8.735,	12.7

"Discharge/Tributary Input Data for Segment 1"

"Flow",	"cBOD5",	"TKN",	"DO",	"Temp"
"(mgd)",	"(mg/l)",	"(mg/l)",	"(mg/l)",	"deg C"
.5,	22,	15.3,	6.5,	20
		12.3 NHz-N		

"Hydraulic Information for Segment 1"

"Length",	"Width",	"Depth",	"Velocity"
"(mi)",	"(ft)",	"(ft)",	"(ft/sec)"
3.7,	7.999,	.4666032,	.2798901

"Initial Mix Values for Segment 1"

"Flow",	"DO",	"cBOD",	"nBOD",	"DOSat",	"Temp"
"(mgd)",	"(mg/l)",	"(mg/l)",	"(mg/l)",	"(mg/l)",	"deg C"
.6752,	7.08,	42.028,	39.442,	8.669,	18.10615

"Rate Constants for Segment 1. - (All units Per Day)"

"k1",	"k1@T",	"k2",	"k2@T",	"kn",	"kn@T",	"BD",	"BD@T"
1.4,	1.283,	18.324,	17.519,	.5,	.432,	0,	0

"Output for Segment 1"

"Segment starts at BIGVEINPOCAHONTAS STP"

"Total",	"Segm."			
"Dist.",	"Dist.",	"DO",	"cBOD",	"nBOD"
"(mi)",	"(mi)",	"(mg/l)",	"(mg/l)",	"(mg/l)"
0,	0,	7.08,	42.028,	39.442
.1,	.1,	6.313,	40.867,	39.072
.2,	.2,	5.819,	39.738,	38.705
.3,	.3,	5.511,	38.64,	38.341
.4,	.4,	5.329,	37.572,	37.981
.5,	.5,	5.232,	36.534,	37.624
.6,	.6,	5.193,	35.524,	37.271
.7,	.7,	5.192,	34.542,	36.921
.8,	.8,	5.217,	33.588,	36.574
.9,	.9,	5.258,	32.66,	36.23
1,	1,	5.31,	31.758,	35.89
1.1,	1.1,	5.369,	30.88,	35.553

modout.txt

1.4,	1.4,	5.484,	29.353,	28.889
1.5,	1.5,	5.523,	28.782,	28.653
1.6,	1.6,	5.563,	28.222,	28.419
1.7,	1.7,	5.604,	27.673,	28.186
1.8,	1.8,	5.645,	27.135,	27.955
1.9,	1.9,	5.686,	26.607,	27.726
2,	2,	5.727,	26.09,	27.499
2.1,	2.1,	5.768,	25.583,	27.274
2.2,	2.2,	5.809,	25.086,	27.051
2.3,	2.3,	5.849,	24.598,	26.83
2.4,	2.4,	5.888,	24.12,	26.61
2.5,	2.5,	5.927,	23.651,	26.392
2.6,	2.6,	5.965,	23.191,	26.176
2.7,	2.7,	6.003,	22.74,	25.962
2.8,	2.8,	6.04,	22.298,	25.75
2.9,	2.9,	6.076,	21.865,	25.539
3,	3,	6.112,	21.44,	25.33
3.1,	3.1,	6.147,	21.023,	25.123
3.2,	3.2,	6.181,	20.614,	24.917
3.3,	3.3,	6.215,	20.213,	24.713
3.4,	3.4,	6.248,	19.82,	24.511
3.5,	3.5,	6.281,	19.435,	24.31
3.6,	3.6,	6.313,	19.057,	24.111
3.7,	3.7,	6.345,	18.687,	23.914

"END OF FILE"

Facility = Big Vein/Pocahontas Prison Site  
Chemical = Ammonia Nitrogen  
Chronic averaging period = 30  
WLAa = 29.5  
WLAc = 4.4  
Q.L. = 0.2  
# samples/mo. = 1  
# samples/wk. = 1

#### Summary of Statistics:

# observations = 1  
Expected Value = 9  
Variance = 29.16  
C.V. = 0.6  
97th percentile daily values = 21.9007  
97th percentile 4 day average = 14.9741  
97th percentile 30 day average = 10.8544  
# < Q.L. = 0  
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity  
Maximum Daily Limit = 8.87774841103177  
Average Weekly limit = 8.87774841103177 = 8.9 mg/l  
Average Monthly Limit = 8.87774841103177 = 8.9 mg/l

The data are:

Facility = Big Vein/Pocahontas Prison Site

Chemical = Ammonia Nitrogen

Chronic averaging period = 30

WLAa = 26.7

WLAc = 6.1

Q.L. = 0.2

# samples/mo. = 1

# samples/wk. = 1

#### Summary of Statistics:

# observations = 1

Expected Value = 9

Variance = 29.16

C.V. = 0.6

97th percentile daily values = 21.9007

97th percentile 4 day average = 14.9741

97th percentile 30 day average = 10.8544

# < Q.L. = 0

Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity

Maximum Daily Limit = 12.3077875698395

Average Weekly limit = 12.3077875698395 = 12.3 mg/l

Average Monthly Limit = 12.3077875698395 = 12.3 mg/l

The data are:

## ATTACHMENT 4

### T & E Species

**VaFWIS Initial Project Assessment Report** Compiled on 7/2/2014, 9:47:16 AM[Help](#)

Known or likely to occur within a 2 mile radius around point 37,18,00.0 -81,21,14.0

in 185 Tazewell County, VA

[View Map of Site Location](#)436 Known or Likely Species ordered by Status Concern for Conservation  
(displaying first 40) (40 species with Status\* or Tier I\*\* or Tier II\*\* )

<u>BOVA Code</u>	<u>Status*</u>	<u>Tier**</u>	<u>Common Name</u>	<u>Scientific Name</u>	<u>Confirmed</u>	<u>Database(s)</u>
050023	FESE	I	<u>Bat. Indiana</u>	Myotis sodalis		BOVA
060169	FESE	I	<u>Bean (pearlymussel), Cumberland</u>	Villosa trabalis		BOVA
060031	FESE	I	<u>Mussel, oyster</u>	Epioblasma capsaeformis		BOVA
060082	FESE	I	<u>Pearlymussel, cracking</u>	Hemistena lata		BOVA
060094	FESE	I	<u>Pearlymussel, littlewing</u>	Pegias fabula		BOVA
060051	FESE	I	<u>Pigtoe, finerayed</u>	Fusconaia cuneolus		BOVA
060052	FESE	I	<u>Pigtoe, shiny</u>	Fusconaia cor		BOVA
060122	FESE	I	<u>Rabbitsfoot, rough</u>	Quadrula cylindrica strigillata		BOVA
050035	FESE	II	<u>Bat. Virginia big-eared</u>	Corynorhinus townsendii virginianus		BOVA
060121	FESE	II	<u>Kidneyshell, fluted</u>	Ptychobranchus subtentum		BOVA
040267	SE	I	<u>Wren. Bewick's</u>	Thryomanes bewickii		BOVA
060080	SE	II	<u>Heelsplitter, Tennessee</u>	Lasmigona holstonia	<u>Yes</u>	BOVA,Habitat,SppObs
040096	ST	I	<u>Falcon, peregrine</u>	Falco peregrinus		BOVA
040293	ST	I	<u>Shrike, loggerhead</u>	Lanius ludovicianus		BOVA
010342	ST	II	<u>Darter, sickle</u>	Percina williamsi		BOVA
060163	ST	IV	<u>Papershell, fragile</u>	Leptodea fragilis		BOVA
040292	ST		<u>Shrike, migrant loggerhead</u>	Lanius ludovicianus migrans		BOVA
050022	FP		<u>Bat. northern long-eared</u>	Myotis septentrionalis		BOVA
080214	FS	I	<u>Stonefly, Beartown perlodid</u>	Isoperla major		BOVA
080226	FS	I	<u>Stonefly, Kosztarab's common</u>	Acroneuria kosztarabi		BOVA
100248	FS	I	<u>Fritillary, regal</u>	Speyeria idalia idalia		BOVA
010341	FS	II	<u>Logperch, blotchside</u>	Percina burtoni		BOVA
040093	FS	II	<u>Eagle, bald</u>	Haliaeetus leucocephalus		BOVA
060050	FS	II	<u>Pigtoe, Tennessee</u>	Fusconaia barnesiana		BOVA
100154	FS	II	<u>Butterfly, Persius duskywing</u>	Erynnis persius persius		BOVA

010429	FS	III	<u>Sculpin, Bluestone</u>	Cottus sp. 1	BOVA
100001	FS	IV	<u>fritillary, Diana</u>	Speyeria diana	BOVA
020020	CC	II	<u>Hellbender, eastern</u>	Cryptobranchus alleganiensis alleganiensis	BOVA
030012	CC	IV	<u>Rattlesnake, timber</u>	Crotalus horridus	BOVA
040372		I	<u>Crossbill, red</u>	Loxia curvirostra	BOVA
040225		I	<u>Sapsucker, yellow-bellied</u>	Sphyrapicus varius	BOVA,Habitat
040319		I	<u>Warbler, black-throated green</u>	Dendroica virens	BOVA
040306		I	<u>Warbler, golden-winged</u>	Vermivora chrysoptera	BOVA
020011		II	<u>Frog, mountain chorus</u>	Pseudacris brachyphona	BOVA,Habitat
020030		II	<u>Salamander, green</u>	Aneides aeneus	BOVA
040052		II	<u>Duck, American black</u>	Anas rubripes	BOVA
040213		II	<u>Owl, northern saw-whet</u>	Aegolius acadicus	BOVA
040320		II	<u>Warbler, cerulean</u>	Dendroica cerulea	BOVA
040304		II	<u>Warbler, Swainson's</u>	Limnothlypis swainsonii	BOVA
040266		II	<u>Wren, winter</u>	Troglodytes troglodytes	BOVA

To view **All 436 species** [View 436](#)

\* FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate; FS=Federal Species of Concern; CC=Collection Concern

\*\* I=VA Wildlife Action Plan - Tier I - Critical Conservation Need; II=VA Wildlife Action Plan - Tier II - Very High Conservation Need; III=VA Wildlife Action Plan - Tier III - High Conservation Need; IV=VA Wildlife Action Plan - Tier IV - Moderate Conservation Need

**Bat Colonies or Hibernacula: Not Known**

#### **Anadromous Fish Use Streams**

N/A

#### **Colonial Water Bird Survey**

N/A

#### **Threatened and Endangered Waters**

N/A

#### **Managed Trout Streams**

N/A

**Bald Eagle Concentration Areas and Roosts**

N/A

**Bald Eagle Nests**

N/A

**Habitat Predicted for Aquatic WAP Tier I & II Species** ( 1 Reach )

[View Map Combined  
Reaches from Below  
of Habitat Predicted  
for WAP Tier I & II  
Aquatic Species](#)

Stream Name	Tier Species						View Map
	Highest TE *	BOVA Code, Status *, Tier **, Common & Scientific Name					
Laurel Fork (50500021)	SE	060080	SE	II	<u>Heelsplitter, Tennessee</u>	<u>Lasmigona holstonia</u>	<u>Yes</u>

**Habitat Predicted for Terrestrial WAP Tier I & II Species** ( 2 Species )

[View Map of  
Combined  
Terrestrial  
Habitat Predicted  
for 2 WAP Tier I  
& II Species  
Listed Below](#)

ordered by Status Concern for Conservation

BOVA Code	Status*	Tier**	Common Name	Scientific Name	View Map
040225		I	<u>Sapsucker, yellow-bellied</u>	<u>Sphyrapicus varius</u>	<u>Yes</u>
020011		II	<u>Frog, mountain chorus</u>	<u>Pseudacris brachyphona</u>	<u>Yes</u>

**Public Holdings:**

N/A

Compiled on 7/2/2014, 9:47:16 AM I565946.0 report=IPA searchType= R dist= 3218 poi= 37,18,00.0 -81,21,14.0

PixelSize=64; Anadromous=0.033209; BECAR=0.032131; Bats=0.023547; Buffer=0.167606; County=0.060892; Impediments=0.026181; Init=0.210053; PublicLands=0.021863; SppObs=0.404774; TEWaters=0.03463; TierReaches=0.069154; TierTerrestrial=0.0972229999999999; Total=1.289074; Trout=0.020353

# Tier Reaches Group Laurel Fork (50500021)

37,18,00.0 -81,21,14.0  
is the Search Point

Display Item Location is  
at center not at map center

## Show Position Rings

☒ Yes ☐ No

1 mile and 1/4 mile at the  
Search Point

## Show Search Area

☒ Yes ☐ No

2 Search distance miles  
radius

Search Point is at  
map center


## Base Map Choices

Topography

## Map Overlay Choices

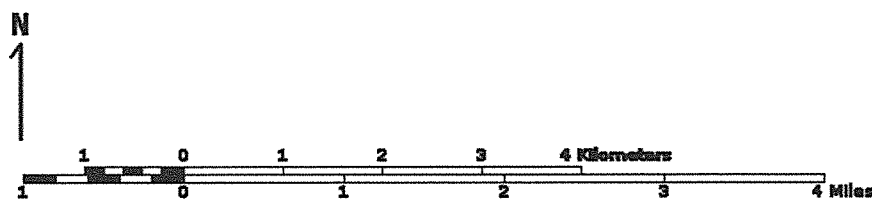
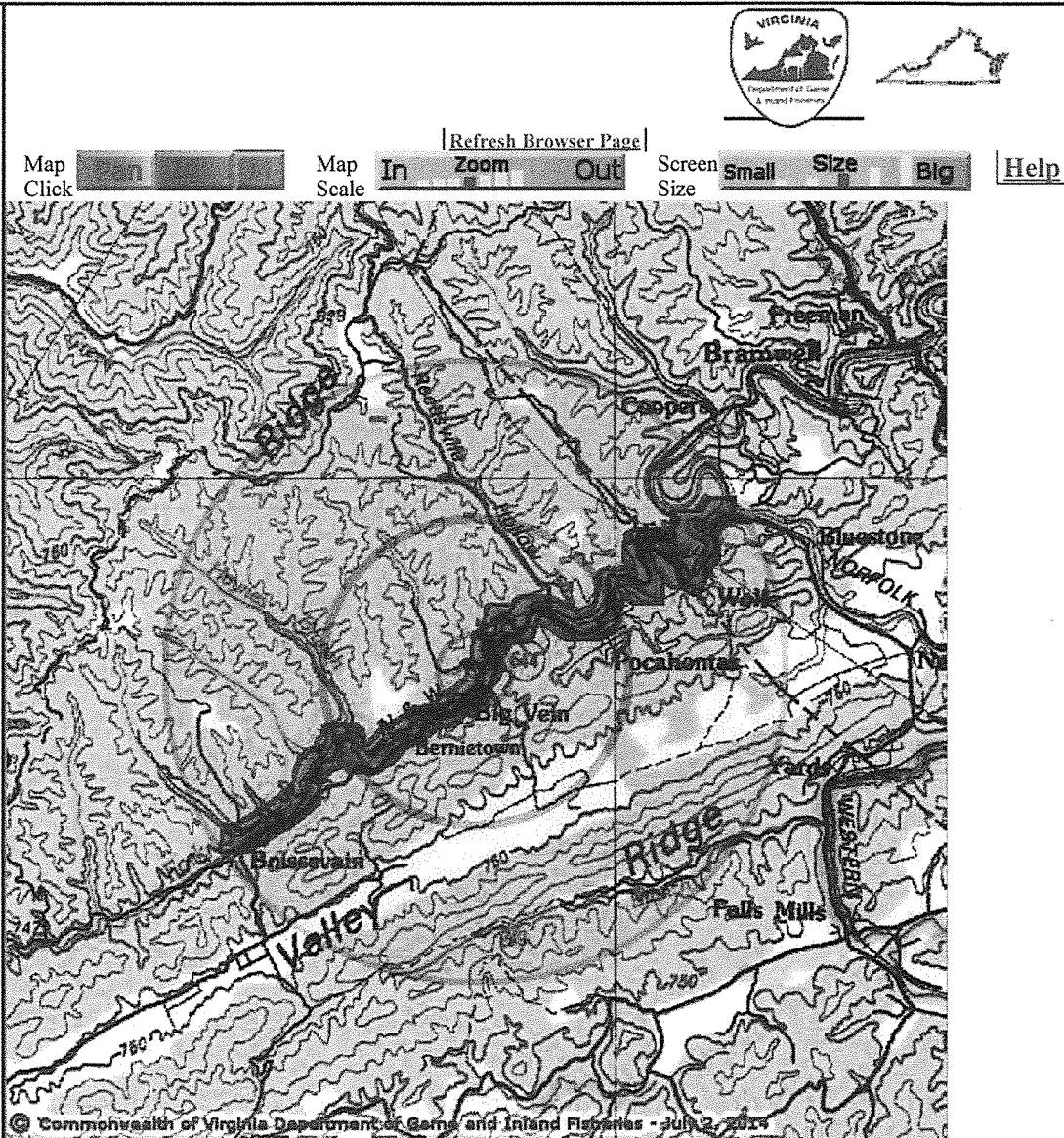
Current List: Position, Search,  
Observation

## Map Overlay Legend

 Position Rings  
1 mile and 1/4  
mile at the  
Search Point

 2 mile radius  
Search Area

 Data  
Observation Site



Point of Search 37,18,00.0 -81,21,14.0

Map Location 37,18,00.0 -81,21,14.0

Select Coordinate System: ☒ Degrees, Minutes, Seconds Latitude - Longitude

☐ Decimal Degrees Latitude - Longitude

☐ Meters UTM NAD83 East North Zone

☐ Meters UTM NAD27 East North Zone

Base Map source: USGS 1:100,000 topographic maps (see [Microsoft.terraserver-usa.com](http://Microsoft.terraserver-usa.com) for details)

Map projection is UTM Zone 17 NAD 1983 with left 463838 and top 4133012. Pixel size is 16 meters. Coordinates displayed are Degrees, Minutes, Seconds North and West. Map is currently displayed as 600 columns by 600 rows for a total of 360000 pixels. The map display represents 9600 meters east to west by 9600 meters north to south for a total of 92.1 square kilometers. The map display represents 31501 feet east to west by 31501 feet north to south for a total of 35.5

ATTACHMENT 5  
303 (d) Fact Sheets  
TMDL



# SWRO 2012 Impaired Waters Categories 4 and 5

## New River Basin

Cause Group Code: **N37R-01-BEN** **Laurel Fork**

Location: This segment includes the Laurel Fork mainstem from the Curran Branch confluence, river mile 5.90, to the West Virginia line at river mile 1.35 on the Anawalt and Bramwell quad sheets.

City / County: Tazewell Co.

Use(s): Aquatic Life

Cause(s) /  
VA Category: Benthic-Macroinvertebrate Sedimentation/Siltation  
Bioassessments / 4A

The biological station at 9-LRR001.39 found that the segment was impaired based on the VSCI.

Assessment Unit / Water Name / Description	Cause Category / Name	Cycle First Listed	TMDL Schedule	Size
VAS-N37R_LRR01A94 / Laurel Fork / Laurel Fork mainstem from the Curran Branch confluence at Boissevain, to WV state line east of Pocahontas, WQS Section 1.	4A Benthic-Macroinvertebrate Bioassessments	1996		4.54

Laurel Fork	Reservoir (Acres)	River (Miles)
Benthic-Macroinvertebrate Bioassessments - Total Impaired Size by Water Type:		4.54

Assessment Unit / Water Name / Description	Cause Category / Name	Cycle First Listed	TMDL Schedule	Size
VAS-N37R_LRR01A94 / Laurel Fork / Laurel Fork mainstem from the Curran Branch confluence at Boissevain, to WV state line east of Pocahontas, WQS Section 1.	4A Sedimentation/Siltation	2010		4.54

Laurel Fork	Reservoir (Acres)	River (Miles)
Sedimentation/Siltation - Total Impaired Size by Water Type:		4.54

### Sources:

Impacts from Abandoned Mine Lands (Inactive)      Silviculture Activities



# SWRO 2012 Impaired Waters

## Categories 4 and 5

### New River Basin

Cause Group Code: **N37R-01-DO**      **Laurel Fork**

Location: This segment includes the Laurel Fork mainstem from the Curran Branch confluence, river mile 5.90, to the West Virginia line at river mile 1.35 on the Anawalt and Bramwell quad sheets.

City / County: Tazewell Co.

Use(s): Aquatic Life

Cause(s) /  
VA Category: Oxygen, Dissolved / 4A

The AWQM station located at 9-LRR001.39 had a 25% exceedance of the dissolved oxygen criteria.

Assessment Unit / Water Name / Description	Cause Category / Name	Cycle First Listed	TMDL Schedule	Size
VAS-N37R_LRR01A94 / Laurel Fork / Laurel Fork mainstem from the Curran Branch confluence at Boissevain, to WV state line east of Pocahontas, WQS Section 1.	4A      Oxygen, Dissolved	2002		4.54

Laurel Fork	Reservoir (Acres)	River (Miles)
Oxygen, Dissolved - Total Impaired Size by Water Type:		4.54

#### Sources:

Sewage Discharges in  
Unsewered Areas



# SWRO 2012 Impaired Waters Categories 4 and 5

## New River Basin

Cause Group Code: **N37R-01-BAC**      **Laurel Fork**

Location: This segment includes the mainstem from the Curran Branch confluence, river mile 5.90, to the West Virginia line at river mile 1.35.

City / County: Tazewell Co.

Use(s): Recreation

Cause(s) /  
VA Category: Escherichia coli / 4A

The AWQM station located at 9-LRR001.39 had a 52% exceedance of the E.coli water quality standard.

Assessment Unit / Water Name / Description	Cause Category / Name	Cycle First Listed	TMDL Schedule	Size
VAS-N37R_LRR01A94 / Laurel Fork / Laurel Fork mainstem from the Curran Branch confluence at Boissevain, to WV state line east of Pocahontas, WQS Section 1.	4A Escherichia coli	2006		4.54

Laurel Fork	Reservoir (Acres)	River (Miles)
Escherichia coli - Total Impaired Size by Water Type:		4.54

### Sources:

Sanitary Sewer Overflows  
(Collection System Failures)

Septage Disposal

(LAX, 38%), high tillage row crops (38%), and streambank erosion (27%). Scenario 2 shows reductions to land-based loads from only AML (57%) and disturbed forest (39%). Scenario 3 shows reductions to sediment loads from AML (57%) and streambank erosion (28%). All three scenarios meet the TMDL goal at a total sediment load reduction of 33.7%. Scenario 1 was chosen to use for the final TMDL due to the similar reductions to many different sediment sources.

**Table 10.2 Final TMDL allocation scenario for the impaired watershed.**

Sediment Source	Laurel Sediment Loads  (Mg/yr)	Scenario 1 Reductions (Final)  (%)	Scenario 1 Allocated Loads  (Mg/yr)	Scenario 2 Reductions  (%)	Scenario 2 Loads  (Mg/yr)	Scenario 3 Reductions  (%)	Scenario 3 Loads  (Mg/yr)
<b>Pervious Area:</b>							
AML	1,610.58	41	950.24	57	692.55	57	692.55
Commercial	0.51	0	0.51	0	0.51	0	0.51
Forest-disturbed	48.01	41	28.33	39	29.29	0	48.01
Forest	113.40	0	113.40	0	113.40	0	113.40
Pasture - Hay	30.70	38	19.03	0	30.70	0	30.70
LAX	21.63	38	13.41	0	21.63	0	21.63
Residential	6.16	0	6.16	0	6.16	0	6.16
High Tillage	574.98	38	356.49	0	574.98	0	574.98
Low Tillage	66.01	0	66.01	0	66.01	0	66.01
Water	0.00	0	0.00	0	0.00	0	0.00
Reclaimed	212.56	0	212.56	0	212.56	0	212.56
Wetlands	0.26	0	0.26	0	0.26	0	0.26
<b>Impervious Area:</b>	0.00	0	0.00	0	0.00	0	0.00
Commercial	12.36	0	12.36	0	12.36	0	12.36
Residential	2.21	0	2.21	0	2.21	0	2.21
<b>Streambank Erosion</b>	67.94	27	49.59	0	67.94	28	48.91
<b>Straight pipes</b>	4.63	100	0.00	100	0.00	100	0.00
<b>Point Sources:</b>	0.00	0	0.00	0	0.00	0	0.00
Private residence	0.04	0	0.04	0	0.04	0	0.04
Northern Tazewell County WWTF	20.73	0	20.73	0	20.73	0	20.73
<b>Watershed Total</b>	<b>2,793</b>	<b>33.7</b>	<b>1,851</b>	<b>33.7</b>	<b>1,851</b>	<b>33.7</b>	<b>1,851</b>

The sediment TMDL for Laurel Fork (Table 10.3) includes three components – WLA, LA, and the 10% MOS. The WLA was calculated as the sum of the permitted point source discharges. The LA was calculated as the target TMDL load minus the WLA load minus the MOS.

**Table 10.3 TMDL targets in metric tons per year (Mg/yr) for the impaired watershed.**

Impairment	WLA (Mg/yr)	LA (Mg/yr)	MOS (Mg/yr)	TMDL (Mg/yr)
Laurel Fork	21	1,830	206	2,057

The reductions required to meet the TMDLs were based on the future growth scenario. The final overall sediment load reduction required for Laurel Fork is 33.7% (Table 10.4).

**Table 10.4 Required reductions for the impaired watershed.**

Load Summary	Laurel Fork (Mg/yr)	Reductions Required (Mg/yr)	(% of existing load)
Future Sediment Loads	2,793	942	33.7
Target Modeling Load	1,851		

**Table 5.2 Fecal coliform land-based loads deposited on all land uses and direct loads in the Laurel Fork watershed for existing conditions and for the final allocation.**

Source	Total Annual Loading for Existing Run (cfu/yr)	Total Annual Loading for Allocation Run (cfu/yr)	Percent Reduction
<b>Land use</b>			
AML	8.25E+12	1.16E+12	86
Commercial	4.24E+11	4.24E+09	99
Crops	2.08E+12	2.08E+10	99
Forest	1.10E+14	1.54E+13	86
Pasture	8.18E+13	8.18E+11	99
Reclaimed	1.11E+12	1.55E+11	86
Residential	6.40E+14	6.40E+12	99
Wetlands	1.20E+12	1.68E+11	86
<b>Direct</b>			
Human	3.52E+12	0.00E+00	100
Livestock	3.08E+11	9.24E+10	70
Wildlife	6.38E+12	4.09E+12	36

**Table 5.3 Average annual *E. coli* loads (cfu/year) modeled after allocation in the Laurel Fork watershed at the outlet.**

Impairment	WLA (cfu/year)	LA (cfu/year)	MOS	TMDL (cfu/year)
Laurel Fork	8.72E+11	1.81E+12	<i>Implicit</i>	2.69E+12
VA0091588	8.71E+11			
VAG400522	8.71E+08			

To determine if the allocation scenarios presented will be applicable in the future, the same scenarios were evaluated with an increase in permitted loads. The permitted loads were increased by a factor of 4 to simulate a population growth. Laurel Fork currently has three permits for fecal coliform, but only two will be in operation in the future (Northern Tazewell County WWTF VA0091588, and Residence STP VAG400522). The TMDL table that reflects this future scenario is in Appendix C.

## ATTACHMENT 6

### Attachment A Data

# REPORT OF ANALYSIS

CLIENT: Tazewell County PSA  
 ATTN: Todd Little  
 ADDRESS: 2748 Rosenbaum Road  
 Bluefield, VA 24605  
 PHONE: 276-945-9439  
 FAX: 276-945-9439

Special Notes: RE: ATTACHMENT A  
 PO# 18630

SAMPLE COLLECTED BY: CLIENT  
 GRAB COLLECTION:  
 Date: 6/30/2014 Time: 1400

COMPOSITE COLLECTION:  
 Start Date: 06/30/14 Time: 0400  
 End Date: 06/30/14 Time: 1200

PICK UP BY: UPS

SAMPLE RECEIPT:  
 Date: 7/1/2014 Time: 0940

NUMBER OF CONTAINERS: 23

SAMPLE CONDITION: ☒ Good ☐ Other (See C-O-C)

REPORT NO: 14-09809 10:27



**RECEIVED**

**JUL 28 2014**

**DEQ SWRO**

SAMPLE ID: EFFLUENT SAMPLE  
 SAMPLE NO: 14-09809

Parameter	Method Number	JRA QL	Result	Unit	Analyst	Date	Time
Dissolved Antimony	200.7	0.005	< 0.005	mg/L	EFA	07/09/14	1138
Dissolved Arsenic	200.7	0.005	< 0.005	mg/L	EFA	07/08/14	1353
Dissolved Cadmium	200.7	0.0005	< 0.0005	mg/L	EFA	07/08/14	1353
Dissolved Chromium III	200.7	0.003	< 0.003	mg/L	EFA	07/08/14	1353
Dissolved Copper	200.7	0.002	< 0.002	mg/L	EFA	07/08/14	1353
Dissolved Lead	200.7	0.005	< 0.005	mg/L	EFA	07/08/14	1353
Dissolved Mercury	245.1	0.0002	< 0.0002	mg/L	PEJ	07/09/14	1445
Dissolved Nickel	200.7	0.005	< 0.005	mg/L	EFA	07/08/14	1353
Dissolved Silver	200.7	0.001	< 0.001	mg/L	EFA	07/08/14	1353
Dissolved Thallium	200.7	0.005	< 0.005	mg/L	EFA	07/08/14	1353
Dissolved Zinc	200.7	0.005	0.010	mg/L	EFA	07/08/14	1353
Kepone	8270D	5	< 5	ug/L	CLH	07/03/14	2128
Dissolved Sulfide(HACH)	HACH8131	0.05	< 0.05	mg/L	EFA	07/01/14	1515
Cyanide	335.4	0.005	< 0.005	mg/L	ARC	07/09/14	1445
Ammonia	*4500NH3D	0.10	2.35	mg/L	ARC	07/03/14	1000
Chloride	*4500Cl C	1	18	mg/L	ARC	07/02/14	1250
Hardness	*2340B	0.331	82.7	mg/L	EFA	07/08/14	1410
Total Recoverable Selenium	200.7	0.005	< 0.005	mg/L	EFA	07/08/14	1410
Dissolved Hexavalent Chromium	*3500Cr B	0.003	< 0.003	mg/L	EFA	07/01/14	1111
<b>Chlorinated Pesticides and PCBs</b>							
BHC-Alpha	608	0.05	< 0.05	ug/L	JFS	07/08/14	0014
BHC-Gamma (Lindane)	608	0.05	< 0.05	ug/L	JFS	07/08/14	0014
Toxaphene	608	0.5	< 0.5	ug/L	JFS	07/08/14	0014
BHC-Beta	608	0.05	< 0.05	ug/L	JFS	07/08/14	0014
4,4-DDD	608	0.05	< 0.05	ug/L	JFS	07/08/14	0014
Aldrin	608	0.05	< 0.05	ug/L	JFS	07/08/14	0014
Dieldrin	608	0.05	< 0.05	ug/L	JFS	07/08/14	0014
Chlordane	608	0.2	< 0.2	ug/L	JFS	07/08/14	0014
4,4-DDT	608	0.05	< 0.05	ug/L	JFS	07/08/14	0014
Total Arochlors	608	0.5	< 0.5	ug/L	JFS	07/08/14	0014

James R. Reed & Associates

770 Pilot House Drive, Newport News, VA 23606

(757) 873-4703 • Fax: (757) 873-1498

VELAP# 460013

EPA# VA00015



# REPORT OF ANALYSIS

SAMPLE ID: EFFLUENT SAMPLE

SAMPLE NO: 14-09809

Parameter	Method Number	JRA QL	Result	Unit	Analyst	Date	Time
<b>Chlorinated Pesticides and PCBs</b>							
4,4-DDE	608	0.05	< 0.05	ug/L	JFS	07/08/14	0014
Heptachlor epoxide	608	0.05	< 0.05	ug/L	JFS	07/08/14	0014
Endosulfan I	608	0.05	< 0.05	ug/L	JFS	07/08/14	0014
Endrin	608	0.05	< 0.05	ug/L	JFS	07/08/14	0014
Endrin aldehyde	608	0.05	< 0.05	ug/L	JFS	07/08/14	0014
Endosulfan sulfate	608	0.05	< 0.05	ug/L	JFS	07/08/14	0014
Endosulfan II	608	0.05	< 0.05	ug/L	JFS	07/08/14	0014
Heptachlor	608	0.05	< 0.05	ug/L	JFS	07/08/14	0014
Mirex	8081B	0.05	< 0.05	ug/L	JFS	07/08/14	0014
Methoxychlor	8081B	0.05	< 0.05	ug/L	JFS	07/08/14	0014
<b>Organophosphorous Pesticides</b>							
Chlorpyrifos	622	0.2	< 0.2	ug/L	JFS	07/07/14	1451
Guthion	622	1	< 1	ug/L	JFS	07/07/14	1451
<b>Organophosphorus Pesticides</b>							
Parathion	614	1	< 1	ug/L	JFS	07/07/14	1612
Demeton	614	1	< 1	ug/L	JFS	07/07/14	1612
Diazinon	614	1	< 1	ug/L	JFS	07/07/14	1612
Malathion	614	1	< 1	ug/L	JFS	07/07/14	1612
<b>Semi-Volatiles</b>							
Nonylphenol	D7065-06	5	< 5	ug/L	CLH	07/08/14	0433
N-Nitroso-di-n-propylamine	625	5	< 5	ug/L	CLH	07/03/14	1724
Bis(2-chloroisopropyl) ether	625	5	< 5	ug/L	CLH	07/03/14	1724
Bis(2-chloroethyl) ether	625	5	< 5	ug/L	CLH	07/03/14	1724
N-Nitrosodimethylamine	625	5	< 5	ug/L	CLH	07/03/14	1724
Hexachlorobenzene	625	5	< 5	ug/L	CLH	07/03/14	1724
2-Chloronaphthalene	625	5	< 5	ug/L	CLH	07/03/14	1724
Hexachlorocyclopentadiene	625	5	< 5	ug/L	CLH	07/03/14	1724
Hexachlorobutadiene	625	5	< 5	ug/L	CLH	07/03/14	1724
Hexachloroethane	625	5	< 5	ug/L	CLH	07/03/14	1724
Dimethyl phthalate	625	5	< 5	ug/L	CLH	07/03/14	1724
1,2,4-Trichlorobenzene	625	5	< 5	ug/L	CLH	07/03/14	1724
Phenol	625	5	< 5	ug/L	CLH	07/03/14	1724
Bis(2-ethylhexyl) phthalate	625	5	< 5	ug/L	CLH	07/03/14	1724
Benzo[b]Fluoranthene	625	5	< 5	ug/L	CLH	07/03/14	1724
Benzo[k]Fluoranthene	625	5	< 5	ug/L	CLH	07/03/14	1724
Benzo[a]Pyrene	625	5	< 5	ug/L	CLH	07/03/14	1724
Indeno[1,2,3-c,d]Pyrene	625	5	< 5	ug/L	CLH	07/03/14	1724
3,3-Dichlorobenzidine	625	5	< 5	ug/L	CLH	07/03/14	1724
2-Chlorophenol	625	5	< 5	ug/L	CLH	07/03/14	1724
2,4,6-Trichlorophenol	625	5	< 5	ug/L	CLH	07/03/14	1724
2,4-Dimethylphenol	625	5	< 5	ug/L	CLH	07/03/14	1724
2,4-Dichlorophenol	625	5	< 5	ug/L	CLH	07/03/14	1724
Isophorone	625	5	< 5	ug/L	CLH	07/03/14	1724
2,4-Dinitrophenol	625	20	< 20	ug/L	CLH	07/03/14	1724

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VELAP# 460013

EPA# VA00015



# REPORT OF ANALYSIS

SAMPLE ID: EFFLUENT SAMPLE  
 SAMPLE NO: 14-09809

Parameter	Method Number	JRA QL	Result	Unit	Analyst	Date	Time
<b>Semi-Volatiles</b>							
Nitrobenzene	625	5	< 5	ug/L	CLH	07/03/14	1724
Pentachlorophenol	625	10	< 10	ug/L	CLH	07/03/14	1724
Dibenz[a,h]Anthracene	625	5	< 5	ug/L	CLH	07/03/14	1724
1,2-Diphenylhydrazine	625	5	< 5	ug/L	CLH	07/03/14	1724
4,6 Dinitro-o-cresol	625	5	< 5	ug/L	CLH	07/03/14	1724
2,4-Dinitrotoluene	625	5	< 5	ug/L	CLH	07/03/14	1724
Chrysene	625	5	< 5	ug/L	CLH	07/03/14	1724
Diethyl phthalate	625	5	< 5	ug/L	CLH	07/03/14	1724
Acenaphthene	625	5	< 5	ug/L	CLH	07/03/14	1724
N-nitroso-di-phenylamine	625	5	< 5	ug/L	CLH	07/03/14	1724
Anthracene	625	5	< 5	ug/L	CLH	07/03/14	1724
di-n-Butyl phthalate	625	5	< 5	ug/L	CLH	07/03/14	1724
Fluoranthene	625	5	< 5	ug/L	CLH	07/03/14	1724
Pyrene	625	5	< 5	ug/L	CLH	07/03/14	1724
Benzidine	625	5	< 5	ug/L	CLH	07/03/14	1724
Butyl benzyl phthalate	625	5	< 5	ug/L	CLH	07/03/14	1724
Benzo[a]Anthracene	625	5	< 5	ug/L	CLH	07/03/14	1724
Fluorene	625	5	< 5	ug/L	CLH	07/03/14	1724
<b>Volatiles</b>							
Bromoform	624	5	< 5	ug/L	SDT	07/02/14	1514
Tetrachloroethene	624	5	< 5	ug/L	SDT	07/02/14	1514
Toluene	624	5	< 5	ug/L	SDT	07/02/14	1514
Chlorobenzene/Monochlorobenzene	624	5	< 5	ug/L	SDT	07/02/14	1514
Ethylbenzene	624	5	< 5	ug/L	SDT	07/02/14	1514
Acrolein	624	50	< 50	ug/L	SDT	07/02/14	1514
Acrylonitrile	624	50	< 50	ug/L	SDT	07/02/14	1514
1,3-Dichloropropene(cis & trans)	624	5	< 5	ug/L	SDT	07/02/14	1514
1,2-Dichlorobenzene	624	5	< 5	ug/L	SDT	07/02/14	1514
Benzene	624	5	< 5	ug/L	SDT	07/02/14	1514
1,4-Dichlorobenzene	624	5	< 5	ug/L	SDT	07/02/14	1514
Chloroform	624	5	< 5	ug/L	SDT	07/02/14	1514
1,3-Dichlorobenzene	624	5	< 5	ug/L	SDT	07/02/14	1514
1,1,2-Trichloroethane	624	5	< 5	ug/L	SDT	07/02/14	1514
Dibromochloromethane	624	5	< 5	ug/L	SDT	07/02/14	1514
Trichloroethene	624	5	< 5	ug/L	SDT	07/02/14	1514
1,2-Dichloropropane	624	5	< 5	ug/L	SDT	07/02/14	1514
1,1,2,2-Tetrachloroethane	624	5	< 5	ug/L	SDT	07/02/14	1514
Bromodichloromethane	624	5	< 5	ug/L	SDT	07/02/14	1514
1,2-Dichloroethane	624	5	< 5	ug/L	SDT	07/02/14	1514
1,1-Dichloroethene	624	5	< 5	ug/L	SDT	07/02/14	1514
Methylene Chloride/Dichloromethane	624	5	< 5	ug/L	SDT	07/02/14	1514
Vinyl Chloride	624	5	< 5	ug/L	SDT	07/02/14	1514
Bromomethane	624	5	< 5	ug/L	SDT	07/02/14	1514
trans-1,2-Dichloroethene	624	5	< 5	ug/L	SDT	07/02/14	1514

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VELAP# 460013

EPA# VA00015



# REPORT OF ANALYSIS

SAMPLE ID: EFFLUENT SAMPLE

SAMPLE NO: 14-09809

Parameter	Method Number	JRA QL	Result	Unit	Analyst	Date	Time
Volatiles							
Carbon Tetrachloride	624	5	< 5	ug/L	SDT	07/02/14	1514

**NOTES:**

JRA Quantification Level is the concentration of the lowest calibration standard above zero with a reliable signal.

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The results on this report relate only to the sample(s) provided for analysis.

Results conform to NELAC standards, where applicable, unless otherwise indicated.

Dissolved metals filtered and preserved in the field.

\*SM 1997 (Ammonia, Hardness),

\*SM 2011 (Chloride, Hexavalent Chromium)

Chlorine performed in the field by client (0.00 6/30/14 @ 1200)

Endosulfan I = Endosulfan Alpha, Endosulfan II = Endosulfan Beta

Bromodichloromethane = Dichlorobromomethane

Dibromochloromethane = Chlorodibromomethane

2 Methyl-4,6 Dinitrophenol = 4,6 Dinitro-o-cresol

Total Aroclors = Total PCBs

Authorized By: Elaine Claiborne

Elaine Claiborne, Laboratory Director

Date: 16-Jul-14

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VELAP# 460013

EPA# VA00015





Company Name: Tazewell County PSA

Company Contact: Todd Little Telephone: 276-945-9439

Results To: Todd Little Fax: 276-945-9439

Address: 2748 Rosenbaum Road PO# 18630

**Billing Address:** Bluefield, VA 24605

Project ID: Attachment A Tazewell County PSA

**PO Box 190, Tazewell, VA 24630**

[illegible]

N= Wastewater, GW = Groundwater, DV - Drinking Water, HW - Hazardous Waste, OTHERS

Completed By:

**inquired By:**

Received By:

**inquired By:**

Received By:

**for Compliance**

**Not for Compliance**

Residual Chlorine 0.0 Date/Time 6-30-14 Initials RL

Arrival Temp:  $27.5 / 1.3$  °C

Dissolved Metals Filtration: Date: 6-30-14 Time: 1:00 Initials TL  
 \*Sb,As,Cd,Cr-III, Cu,Pb,Hg, Ni,Ag,Tl, Zn  
 \*\*24 hour holding time: Filtration Date: 6-30-14 Time: 1:20 Initials TL

**\*CN Interference Check:**

Sulfide:	Positive	Negative
Oxidizing Agent:		

Positive	Negative
<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>

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2 copies

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